

Covered in Section 4...

Section 4 reviews the existing pedestrian system, context of land use and transit services that influence the existing and proposed pedestrian system; and the location of study corridors and intersections.

Section 4. Pedestrian System Plan

4.1 Existing System Overview

Durham's current pedestrian system is made up of sidewalks and trails. In order to understand the entire network, it is important to understand the major roads in the city, sidewalk location and condition, and other key factors in the pedestrian system, such as the location of transit routes and stops, schools, and land uses. The following section describes the existing pedestrian system and its related facilities, as well as the needs of the system.

Major Roads

Figure 4-1 shows major roads in the City of Durham. The City's major east-west corridors are I-40 in the south and I-85 in the north, University Drive, and Martin Luther King Jr. Blvd. US 15-501 (Chapel Hill Blvd.), Fayetteville Street, and Alston Ave (HWY 55) serve as major north-south connectors.

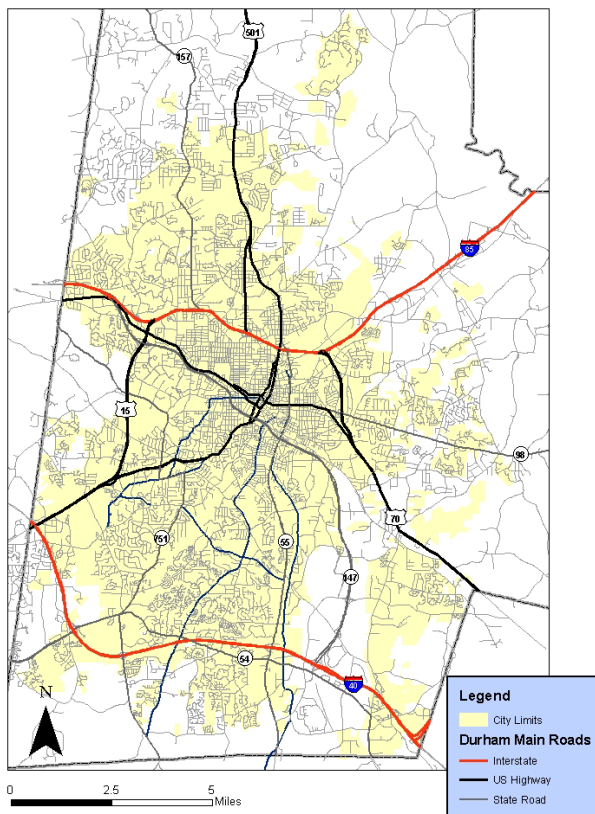


Figure 4-1. Map of major roads and highways in Durham. For larger map version, see <http://www.durhamnc.gov/durhamwalks/>.

Existing Sidewalk and Paved Trail Locations

Inventory. As discussed in Section 2, the current pedestrian system is made up of sidewalks and trails. As part of this Plan's preparation, an inventory was conducted from July 2005 to January 2006 of existing sidewalk and paved trails and their conditions in the City of Durham. Figure 4-2 shows the results of that inventory, and indicates the locations of current existing sidewalk and paved trails.

Sidewalk to Roads. Durham has approximately 1,124 miles of road and 409 miles of sidewalk and paved trails, which makes for a ratio of approximately one mile of sidewalk and paved trails to 2.7 miles of road (.36:1 miles sidewalk to road). In an ideal city, one might imagine that the ratio of miles of sidewalk and paved trails to miles of roadway should be 2:1 or even greater. This would be a scenario in which all city roads have sidewalk on both sides, plus additional off-road paved trails. However, this ratio is not feasible, or even necessary. Even in an ideal city, some roads are limited access, such as I-85, I-40, and parts of US 15-501 in Durham. At the same time, some low-trafficked neighborhood roads may not need sidewalk at all, or may not need it on both sides of the road. As a result, even an ideal city would probably not reach a ratio of 2:1, but instead something lower, like 1.75 miles of sidewalk to one mile of road.

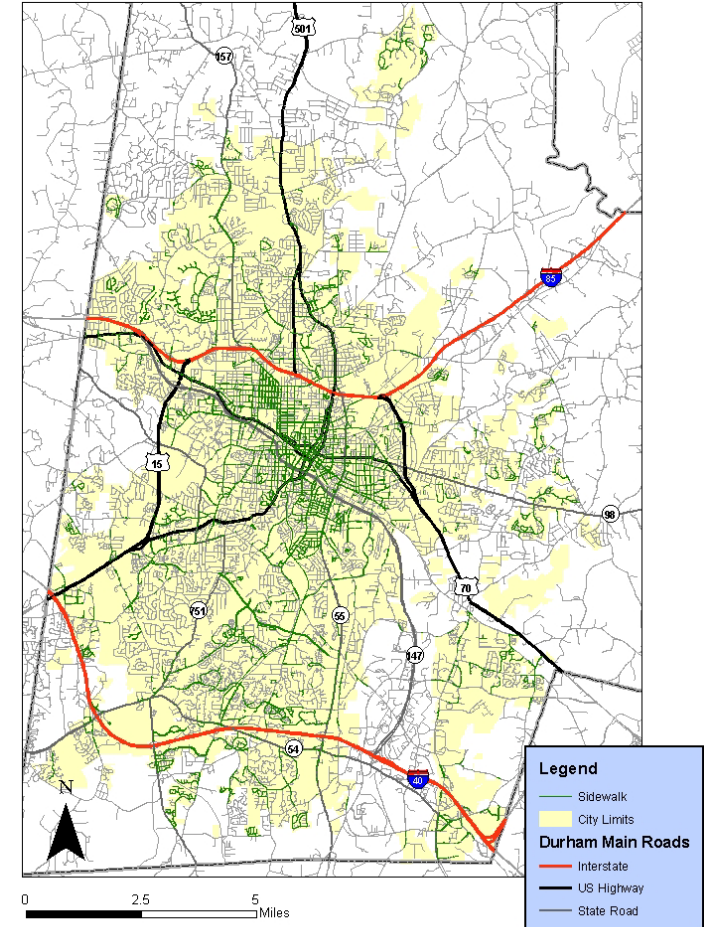


Figure 4-2. Map of existing sidewalk and paved trails in Durham, NC. For larger map version, see <http://www.durhamnc.gov/durhamwalks/>.

Sidewalk and Paved Trail Condition

Figure 4-3 shows the condition of sidewalk and paved trails in Durham as reported in the inventory conducted for this plan. Condition is characterized by the level of faulting, cracking, or wearing in a particular segment, as identified by a field technician during the course of the inventory process. A complete description of the inventory's attributes and how they were determined is contained in Appendix 5. Sidewalk or paved trail marked in "good" condition in Figure 4-3 has no signs of deterioration. Sidewalk or paved trail marked "other" shows signs of deterioration as evidenced by the presence of either faulting, cracking, or wearing, or any combination of the three. The city has approximately 320 miles of "good" condition sidewalk and paved trail, or 78 percent of its total sidewalk and paved trail miles.

Sidewalk and Paved Trail Interface

It is important to consider both sidewalks and paved trails in this plan because both types of facilities contribute to the pedestrian system in Durham. Many sidewalks are also considered paved trails by the Durham Parks and Recreation Department's *Trails and Greenways Plan*, and many paved trails, such as the American Tobacco Trail and Ellerbee Creek Trail, are used by citizens not only as a recreation facility but also as a transportation facility for much of their commuting to and from work or for access to shopping and other services. For this reason, the interface between sidewalks and paved trails should be carefully planned in order to increase connectivity and avoid situations of "stranding" pedestrians at the ends of trails or sidewalks which do not link to the rest of the pedestrian system.

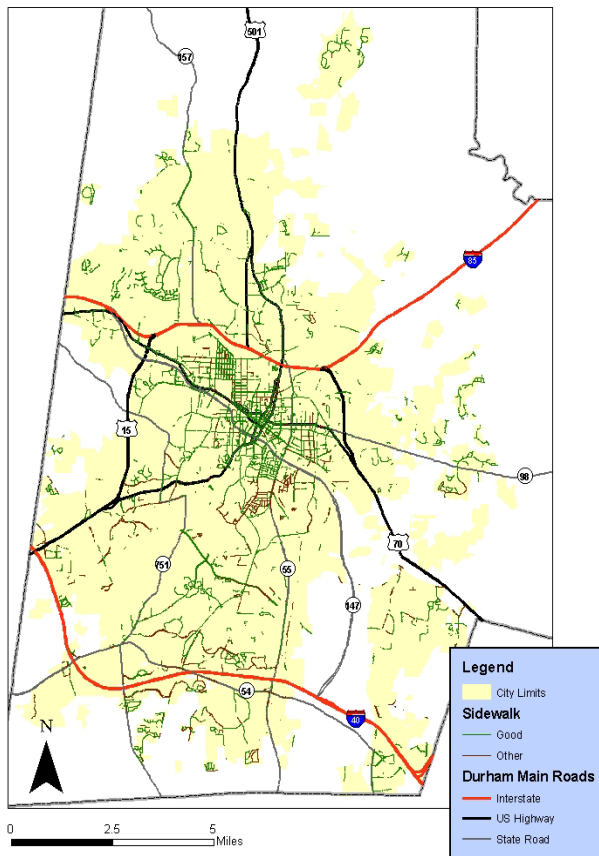


Figure 4-3. Sidewalk and paved trail condition in Durham, NC. For larger map version, see <http://www.durhamnc.gov/durhamwalks/>.

ADA Accessibility

Figure 4-4 shows a map of ADA accessible sidewalk in Durham. ADA accessibility is defined as the presence of a curb ramp at both ends of the sidewalk segment. For the purposes of this analysis, a non-compliant segment of sidewalk has either no curb ramps or a curb ramp at only one end. In general, ADA requirements for pedestrian facilities are more than just curb ramps; they include items such as clear widths, level landings, and maximum slope restrictions. For a complete listing of ADA requirements, see the Department of Justice's ADA Standards for Accessible Design (28 CFR Part 6, revised of July 1, 1994).

For more information on the inventory shown in Figure 4-4 was conducted, please see Appendix 5.

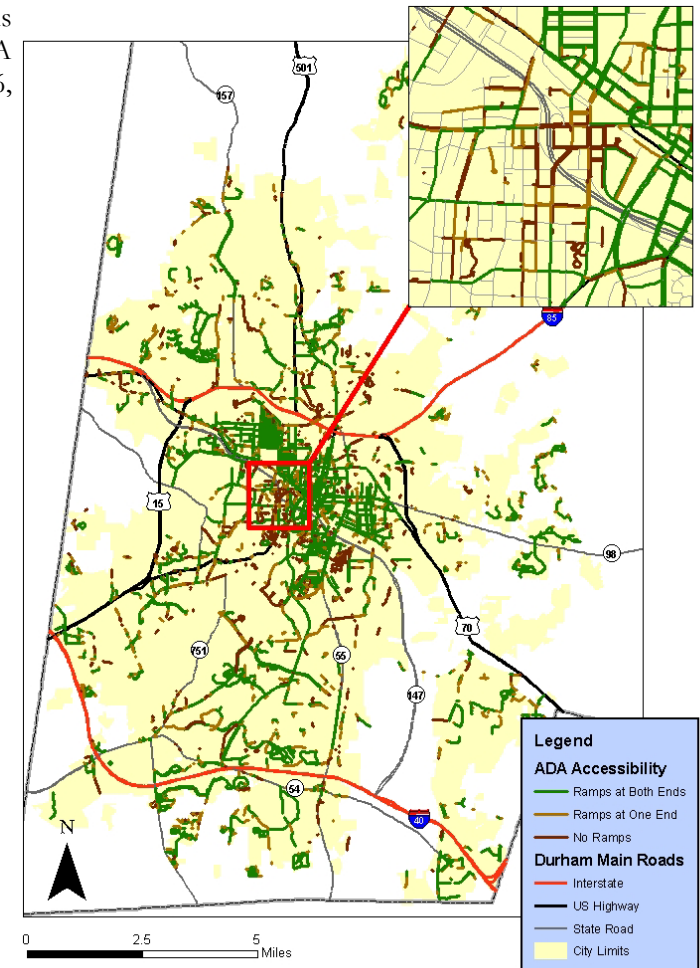


Figure 4-4. Locations of ADA-compliant sidewalk and paved trails in Durham. For larger map version, see <http://www.durhamnc.gov/durhamwalks/>.

Transit

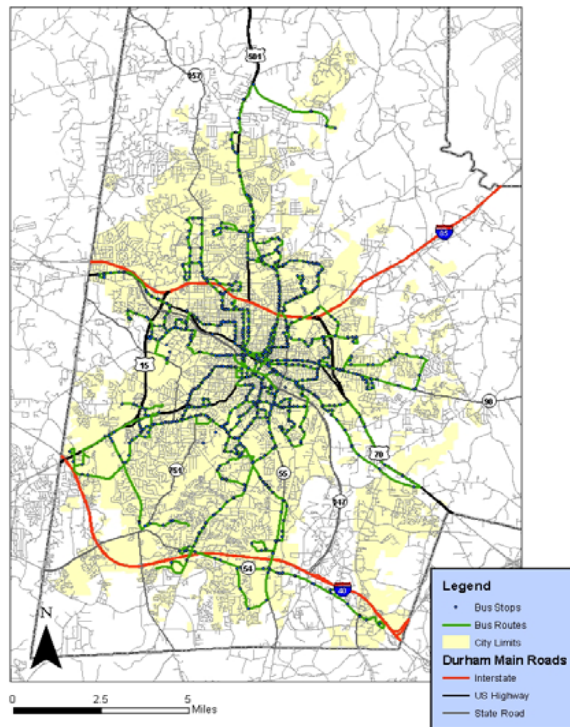


Figure 4-5. Transit in Durham.

The transit system and the pedestrian system are two pieces of Durham's transportation network that are critically dependent on each other to function well. Many of the people who use transit are also the main users of the pedestrian system. Good sidewalk and safe street crossings are often needed for walking to and from transit stops, and pedestrian amenities like benches and shade trees are useful for making the wait at a stop more pleasant. It is important to know where transit stops and routes are when identifying pedestrian needs so as to ensure that adequate facilities are present to support transit and make for a smooth exchange between the two systems. The following paragraphs provide a brief description of Durham's transit system, however, the most up-to-date information can be found online at www.durhamnc.gov and www.ridetta.org. In Section 5, proposed sidewalk projects are evaluated in relation to the existing transit facilities as part of project identification and prioritization.

Durham Area Transit Authority (DATA)

The City of Durham assumed the operation of the local fixed route bus system in 1991, naming it Durham Area Transit Authority (DATA). Fixed route buses serve all of the City's major destinations including universities, hospitals, schools, businesses, and shopping centers. The system involves 165 employees and 43 buses transporting 13,000 people daily on 19 different bus routes with headways that range from a half hour to an hour.

DATA provides service every day of the year except Christmas Day. Monday through Saturday, service is provided from 5:30 a.m. until 12:30 a.m. the next morning. On Sundays and Holidays, service is provided from 6:00 a.m. until 7:30 p.m. These Holidays are: New Years Day, Martin Luther King, Jr. Day, Memorial Day, July 4th, Labor Day, and Thanksgiving Day. Fares are as follows: \$1.00 Regular single pass, \$12.00 for a seven-day pass; and \$36 for an unlimited 30-day pass. Transfers are not free, and every ride costs the full fare. Half-price discounts are given to disabled persons on regular and multi-day fares. Seniors 65 and older and children less than 12 years of age may ride for free. Students aged 17 or younger may ride DATA for \$0.25 at any time if boarding at a school, and between 5:00 a.m. and 8:00 p.m. if boarding elsewhere. Children less than five years of age or 43 inches in height may ride for free. Bicycles are permitted on all DATA buses.

All of the DATA buses are wheelchair accessible and can hold up to two wheelchairs. Persons with a disability that prevents them from using the fixed route bus service may qualify for the DATA ACCESS van service. ACCESS is DATA's demand-responsive paratransit system; fares are currently \$1.50 for a one-way trip. This system includes 43 vans and 57 employees transporting clients to various places within the City of Durham.

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Triangle Transit Authority

The City of Durham is also served by the Triangle Transit Authority (TTA), which runs a regional bus service with a transfer station in Durham's Research Triangle Park (RTP). Other major stops in Durham include Duke Hospital, the Downtown Durham bus transfer center, the American Tobacco Campus, and Southpointe Mall. TTA runs 9 regular routes to Durham, which are shown in Table 1. Regular routes run from about 5 AM until 7 PM Monday through Friday with headways of an hour, and a half hour at peak service. Route 105 has an RTP to Raleigh Midday Express service and a Raleigh to RTP Evening Express service. Saturday routes to Durham are as shown in Table 2. Hours for Saturday service are generally from 7 AM to 7 PM with one-hour headways. TTA also runs an airport shuttle service, the routes for which are shown in Table 3.

Fares for TTA are \$4 for a Regional Day Pass, and \$5 for a Regional Express Day Pass. Discounts are provided for the elderly and disabled, students, and bundles of tickets. In addition to bus service, TTA provides an emergency ride home service, vanpools, carpools, and ridesharing program.

Table 4-1. Regular service TTA bus routes serving Durham.

Route Number	Destinations
105, 107	Raleigh to NC State to RTP
201	North Raleigh to RTP
248	Brier Creek/Alexander Dr/RTP
301	Raleigh to NC State to Cary Train Station to RTP
310	Apex/Cary/RTP
311	Apex/RTP
402, 412	RTP to Durham to Chapel Hill to RTP

Table 4-2. Saturday service TTA bus routes serving Durham.

Route Number	Destinations
101	Raleigh to RTP
401	RTP to Chapel Hill to Durham to RTP
747	RTP to Raleigh Durham Airport

Table 4-3. TTA Airport Shuttle Service serving Durham.

Route Number	Destinations
747	RTP to Raleigh Durham Airport
42	Northwest RTP (RTI/IBM) to Raleigh-Durham Airport
45	Southern RTP (EPA/NIEHS)
46	Northeast RTP (Marriott/IBM 500/Cree)

Future Light Rail. Durham will also have three stops on the TTA's Regional Rail Phase I project: Ninth Street, Downtown Durham, and Alston Avenue/NC Central. There is also a proposed stop in the future at the Duke Medical Center.

Transit Contact Information. Since fare structures, routes, and other policy options are subject to change, people are encouraged to contact the transit service agencies directly before taking their first trip.

DATA: www.durhamnc.gov/departments/works/data.cfm
(919.683.DATA or 919.688.1525 for ACCESS service)

TTA: www.ridetta.org (919.549.9999)

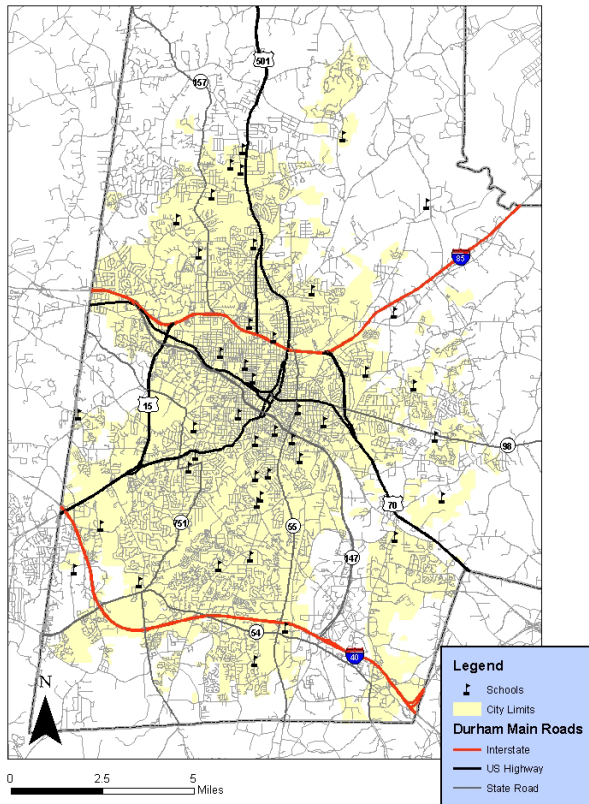
Schools

It is important to discuss the school system in the pedestrian plan because schools are a prime opportunity to promote walking, both for the students nearby and for the employees who work there. Across the nation, the Safe Routes to School movement (discussed in further detail in Section 7) is promoting walking to school for a variety of reasons, including the need to combat today's childhood obesity epidemic. In addition, schools are locations that are already the focal point of much car use and pedestrian activity – buses and parents in their own cars arrive dropping kids off and picking them up from school while other children from nearby neighborhoods walk there. Such a mesh of cars and pedestrians, all arriving at approximately the same time, demands well-designed pedestrian facilities that include adequate sidewalks and safe intersections and street crossings. The following paragraphs describe Durham's school system and how it relates to the existing pedestrian system.

The City of Durham is part of the Durham County Public School system, which (in 2006) encompasses 48 schools total: 28 elementary schools, eight middle schools, and seven high schools plus three year-round schools, the Durham School of the Arts, Lakeview Secondary School and one hospital school. With about 4,600 employees (2,300 teachers), the system averages 32,000 students enrolled each year and offers a variety of after-school programs, including after-school day-care and athletic programs. Bus service through the public schools is provided to approximately 18,000 students, 180 days a year, on 300 buses. At this time, the Durham County Public School system does not maintain a count of the number of students that walk to school. A school system may establish a walk zone, which is a distance around a school within which the school will not provide bus service to students and instead students are expected to walk. As of the publication of this Plan, the Durham County Public School System does not have any walk zones established.

As part of the Durham Pedestrian Plan, a school activity was conducted in which students from the elementary schools in the Durham Public Schools System were invited to perform pedestrian audits of the neighborhoods near their schools. Twenty schools participated in this program; these were:

- | | | |
|-----------------------|--------------------|---------------|
| • Fayetteville Street | • RN Harris | • Oak Grove |
| • Mangum | • Barton | • Eno Valley |
| • Eastway | • Southwest | • Holt |
| • George Watts | • C. C. Spaulding | • Parkwood |
| • Morehead Montessori | • W. G. Pearson | • Creekside |
| • Hillandale | • Club Blvd Magnet | • Forest View |
| • Lakewood | • Pearisontown | |



Students' assessments of the area near their schools and photos of the schools were on display at City Hall during November 2005. Student's assessments found that many schools needed better pedestrian access, as well as more traffic calming near to the schools.

Figure 4-6. Schools in Durham.

Land Uses

Durham's land uses can be divided into the following categories: residential, agricultural, vacant land, commercial, recreation, community/public service, industrial, and other. As can be seen in the map to the right, the majority of land uses within the City are residential. Durham's downtown center is still predominantly commercial and industrial, but some residential has begun to appear. Educational institutions such as Duke University and North Carolina Central University also make up a good portion of the land uses in the City.

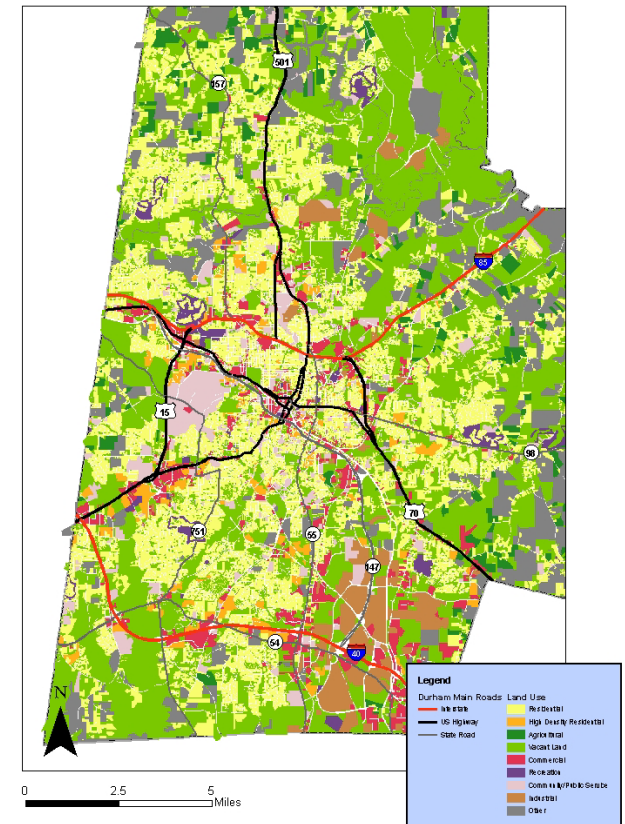
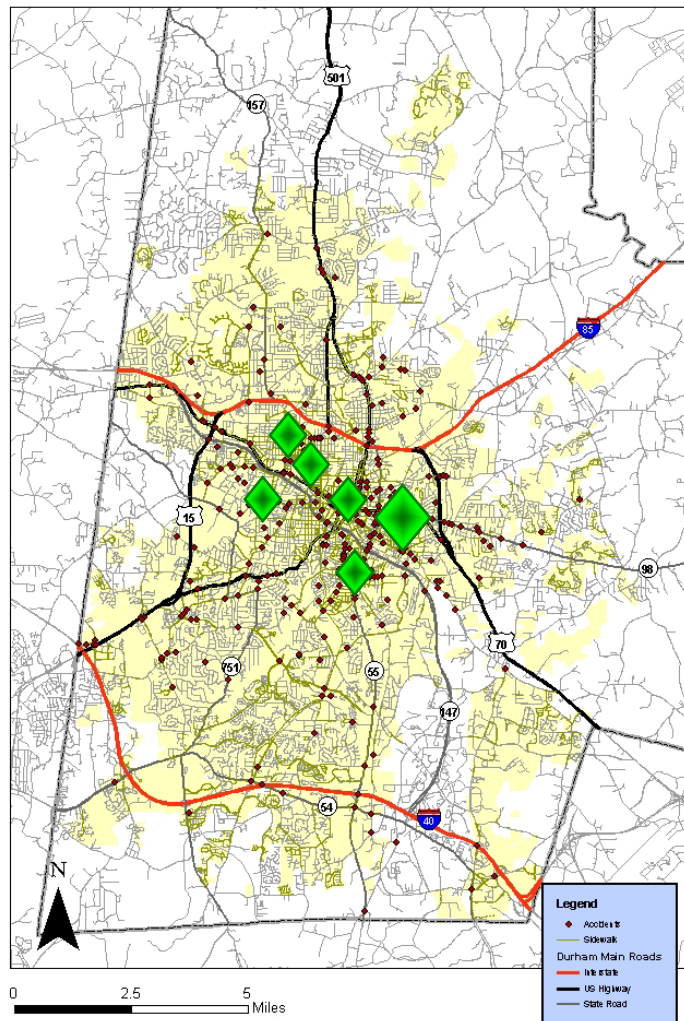


Figure 4-7. Land Uses in Durham.

Figure 7-1. Pedestrian Activity Centers.



Pedestrian Activity Centers

Ninth Street Commercial Area. This area is located in the western part of central Durham, next to Duke University's east campus. It is a popular shopping and eating destination for students and locals, and the surrounding business and residential development mimics Ninth Street's walkable nature. A future TTA light rail station is planned for Ninth Street.

Brightleaf District. The Brightleaf District consists of a cluster of former tobacco warehouses just east of Downtown Durham that have been converted into business, commercial, and residential space. This location is a popular dining location for both locals and university students from Duke and NCCU. The area experiences heavy pedestrian travel between shops, restaurants, businesses, and residences.

Downtown Durham. Like most central business districts, Downtown Durham has long been a pedestrian-oriented location. In addition to traditional development, the area is home to the popular Durham Bulls Stadium and adjacent new American Tobacco Campus, both of which have been designed with the pedestrian foremost in mind. Recently, former businesses and tobacco warehouses have been converted into livable apartments and condos, adding residential development to the existing business and commercial district, and creating a 24-hour pedestrian activity center bustling with business patrons during the day and restaurant and entertainment patrons at night. A future TTA light rail station is planned for downtown.

North Carolina Central University Area. Immediately south of the Downtown area between the Fayetteville Street and Alston Avenue corridors, is North Carolina Central University. NCCU is a historically black state college that has developed into a nationally recognized institution. Surrounding the university itself is pedestrian-oriented residential and commercial development that serves students, faculty, staff, and locals. The area currently experiences heavy pedestrian travel within and between the university and surrounding neighborhoods, and is well served by the local Durham Area Transit Authority bus service. A future TTA light rail station is planned for Alston Ave, near NCCU and Durham Technical Community College, and will only increase the amount of pedestrian traffic to and from the area.

Chapel Hill Street Area.

Chapel Hill Street is an east-west corridor that connects downtown to the Burch Avenue, Lakewood and Forest Hills neighborhoods, Duke's west campus, and a plethora of local businesses in between. Chapel Hill Street is also home to the local Amtrak station and will soon house the new Durham

Multi-Modal Transportation Center, a hub for area DATA and TTA passengers. In addition to this future transit-intensive development, Chapel Hill Street provides a crucial link between many older Durham neighborhoods and the central business district.

Northeast Central Durham.

This area is a highly urbanized residential and commercial district east of Downtown Durham, which is currently experiencing a renaissance. From crash analysis, it can be seen that there is a high level of existing pedestrian travel in the area, given the concentration and numbers of pedestrian-related crashes that have occurred between January 2001 and December 2003. In addition, many corridors that run throughout Northeast Central Durham are gateways into the downtown, and as development occurs so too will even more increases in pedestrian traffic to/and from downtown. This location should be recognized as a pedestrian-dominated community and future street treatments should be designed appropriately to both improve pedestrian safety and enhance the pedestrian environment.

4.2 Future System

Project Development

Projects were developed based on several factors: public comments, crash data and safety, maintenance needs, presence of transit routes, schools, future and existing greenways, and complimentary land uses. Following the public workshops, planning staff received approximately 460 comments (out of 833 total comments) on approximately 100 roads in the City of Durham. From these comments, a preliminary listing of projects were generated which were then added to as additional project needs were identified. Specific focus locations were projects near Durham Public Schools, transit routes, greenways, or parks. Projects were also broken into several different categories: sidewalk construction, maintenance, and intersections.

New Sidewalk Construction Projects

New sidewalk construction projects include projects for all new sidewalk construction on a road that did not previously have sidewalk, and projects for adding sidewalk to connect gaps or provide sidewalk on both sides of a road that may already have had some sidewalk. The result of our analysis is a list of 179 corridor projects, which are shown in Figure 4-8. A listing of all the projects by name and limits is available in Appendix 3.

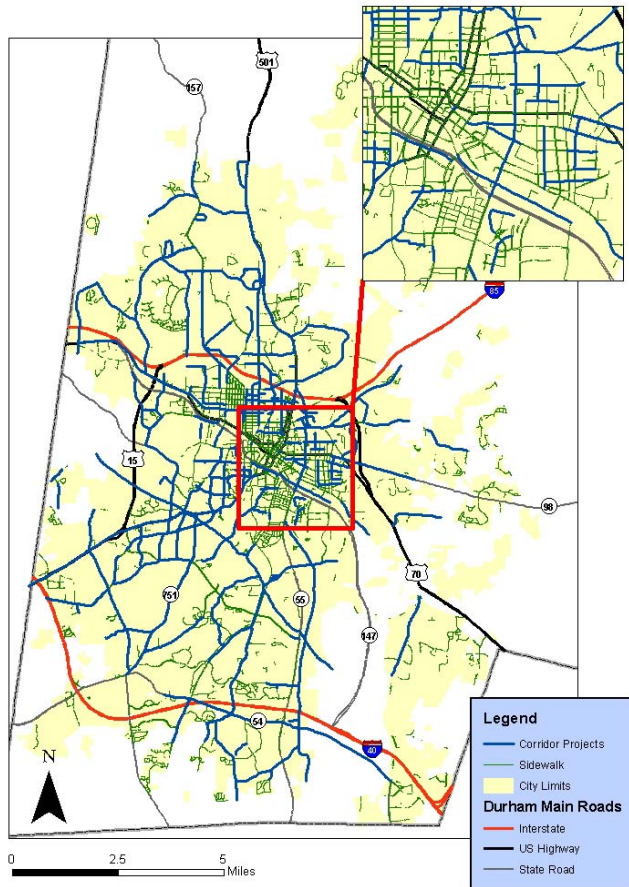


Figure 4-8. Proposed corridor projects in Durham.
For larger map version, see
<http://www.durhamnc.gov/durhamwalks/>.

Safe-Routes-to-School Project Opportunities

Some corridor projects were specially identified because they serve a particular need at a school. The list of schools-related projects is as follows:

Road Name	
Casa	Luther
Cheek	Main
Cook - Juliette	Mathison
Dixon	Miami
Fayetteville2	Milton
Freeman	Newby
Hart	Riddle
Holt School	Ridgeway
Jester	Tom Wilkinson
Latta	Valley
Lebanon	

PLEASE NOTE: The numbers and letters after road names have been added to for the purposes of creating a unique identifier for each proposed project. This will allow for projects that may occur on the same road but in different locations to be distinguished one from another.

Maintenance Projects

Any segment of sidewalk that showed signs of deterioration as evidenced by cracking, faulting, or wearing was identified as a candidate maintenance project. There were over 274 roads that showed signs of deterioration.

Intersection Projects

Intersection projects were generated primarily from public comment and staff input, and an analysis of frequent crash locations. Seventy-eight intersection projects were identified; they are displayed in Figure 4-9. A complete listing is available in Appendix 2.

Study Corridors and Intersections

Five corridors and nine intersections were selected by the City of Durham staff for further study and analysis. An analysis of each of these is found in Appendix 3. These corridors and intersections include:

Corridors	Intersections
Alston	Glendale/Washington
Fayetteville	Old Chapel Hill Road/Garrett
Holloway	Broad/Perry
Roxboro	Hillsborough/LaSalle
University	Club/Buchanan
	Alston/Lawson
	Cranford/Cameron
	Juniper/Hyde Park
	Roxboro/Knox

The following text briefly describes each corridor and intersection and the reasons they were selected for further study. A variety of factors were considered in selecting these locations, including safety needs, potential or existing pedestrian usage, traffic volumes, difficulty of analysis, and geographical equity.

Corridors

Alston Avenue

Alston Avenue is a major north-south corridor for both vehicular and pedestrian travel in Durham. It connects Downtown Durham with the North Carolina Central University (NCCU) and Durham Technical Community College campuses, as well as to surrounding residential neighborhoods to the south. The northern portion of Alston Avenue – the “Golden Belt District” is recognized as a gateway into downtown and is currently experiencing an explosion of transit-oriented residential development, which will eventually be linked to the future light rail station sited in the area. This near-downtown neighborhood is connected to the historic Hayti neighborhood to the south by a pedestrian bridge, which is under the process of reconstruction. Further south, the corridor provides access to more residential neighborhoods and the Campus Hills Recreation Center. Existing pedestrian use along the corridor includes both students and professionals traveling between NCCU and Durham Tech, and between residential neighborhoods, downtown, and the local recreation

center. In addition, the area is easily accessed by a trail network that links pedestrians to the American Tobacco and Riddle Road trails. Alston Avenue is also a major transit route and well-served by local DATA buses

Fayetteville Street

Fayetteville Street is another major north-south corridor with residential, commercial, and industrial development. The road parallels Alston Avenue, running from Downtown Durham and the Durham Freeway (NC 147), past the west side of the NCCU campus to Southpoint, a major commercial and residential activity center in the south of Durham along I-40. Fayetteville Street connects several major residential neighborhoods, including Woodcroft and Hope Valley Farms to the south and Hayti to the north, with a number of local schools including Hillside High School, Southwest Elementary, Fayetteville Street Lab Elementary and Pearsontown. In addition, the corridor is paralleled by the popular shared-use American Tobacco Trail, and is served heavily by local DATA buses. Near downtown and NCCU, the corridor has high levels of existing pedestrian travel between the schools, downtown, residential neighborhoods and commercial areas. Further south, the corridor has the potential for increased pedestrian travel as pedestrian facilities are improved. Pedestrian travel along this corridor can range from trips to and from the schools, major commercial centers, and recreation areas, as well as through-travelers or transit riders headed south to Research Triangle Park.

Holloway Street

Holloway Street is a major east-west route in East Durham that currently experiences heavy vehicle and pedestrian traffic between commercial and residential uses. Beginning near the City's Main Public Library, the street provides a connection for residential neighborhoods in Northeast Central Durham west into the downtown and east to US 70, before becoming NC 98 near the city-county line. Holloway Street provides important access as a gateway into downtown, and acts as a major connector between residential neighborhoods and local businesses in and near downtown. Holloway also serves a number of local parks and schools in the area, and is well-served by local DATA buses. In addition, the intersection of Holloway Street and Miami Boulevard is a major commercial activity center, which provides services to many of the residents nearby and has a high pedestrian rate, but few sidewalks or other pedestrian facilities.

Roxboro Street

Another major north-south route, Roxboro Street serves as one of the few direct connections between North Durham, Downtown Durham, and South Durham. Beginning in North Durham, the

street heads south past several major activity centers, including the Oxford Commons strip mall, Durham Regional Hospital, and the Old North Durham neighborhood, into Downtown. South of downtown, Roxboro Street connects to residential neighborhoods near University Drive and Lakewood Avenue, passes beneath the American Tobacco Trail and intersects with Cornwallis Road, a major access route to the Research Triangle Park area. Major pedestrian activity occurs near the activity centers in North Durham, within Downtown, and in the residential areas south of Downtown.

University Drive

University Drive serves as a major east-west route, connecting West Durham into downtown. Beginning at the intersection with Garrett Road, University passes many major commercial and residential activity centers, including the Southsquare Mall area, Hope Valley Elementary, the commercial development on Business US 15-501 and University Drive, through the Forest Hills neighborhood and into the Lakewood area. This street runs through diverse types of neighborhoods, ranging from low-income to high-income areas, and was one of the original roads from Downtown Durham to Chapel Hill. Heavy levels of pedestrian travel currently exist from the Forest Hills neighborhood towards downtown and west to the restaurants along Business US 15-501, as well as from the neighborhoods along Hope Valley Road to commercial business along University Drive. There is the potential along University Dr for more pedestrian traffic with improved facilities.

Intersections

Glendale/Washington

This intersection is located in a residential area of North Durham, just north of I-85. Although the intersection is in a neighborhood, both Washington and Glendale are major connector streets from North Durham into Downtown. The intersection was recently re-designed as a traffic circle. Current issues include maintaining the residential nature of the area, creating a safe environment for pedestrians walking in the neighborhood, and traffic calming to reduce dangerous vehicular traffic.

Old Chapel Hill-University/Garrett

This is a major signalized intersection with both roads being four lanes in both directions. Old Chapel Hill Road connects Durham to Chapel Hill. Just west of the intersection on Old Chapel Hill Road is Githens Middle School. East of the intersection, Old Chapel Hill Road becomes University Drive, which then connects to commercial development at the Southsquare commercial activity area and developing residential neighborhoods. Garrett Road is a north-south route which connects to US

15-501 several miles north of the intersection, and to Hope Valley Road and Jordan High School approximately ten miles south of the intersection. Land uses surrounding the intersection are primarily commercial, however the area is slowly being built out with townhomes and apartments that may generate a higher level of pedestrian demand. Given the size of the intersecting roads, crossing distances at the intersection are especially large, and changes in signal timing may need to be considered. In addition, DATA buses service the intersection and the interface between the transit and pedestrian system should be strongly considered.

Broad/Perry

This three-legged unsignalized intersection is located at the perimeter of Duke University's East Campus near the Ninth Street commercial activity center, and has some of the highest volumes of pedestrian travel in the City of Durham. Broad Street is a major thoroughfare for vehicular traffic, which pedestrians must cross to access the Bull City Market shopping center and Perry Street and to connect to Ninth Street. This intersection already has pedestrian signage and a crosswalk, however, a persistent problem remains of vehicle failure to yield to pedestrians.

Hillsborough/LaSalle

Hillsborough Road is a five-lane roadway, which carries vehicular traffic from the Ninth Street/Downtown Durham area west to the Durham Freeway/I-85. LaSalle Street is a lower (vehicular) volume road which is part of a greater connecting route from the neighborhoods north of the intersection south to the Duke University campus. Although this intersection is signalized, pedestrians still experience problems with vehicular failure to yield and high levels of discomfort when crossing the street due to perceived danger. In addition, the crash analysis indicated two pedestrian-related crashes were reported at this intersection between 2001 and 2003.

Club/Buchanan

This intersection is located between Durham's Walltown neighborhood, located west and south of the intersection, and the Northgate Mall commercial area, located north and east of the intersection. Both Club and Buchanan Boulevards are major thoroughfares through central Durham, and therefore the intersection has heavy vehicular traffic in all four directions. At the same time, pedestrian traffic is generated from the surrounding neighborhood to Northgate Mall, from the Mall to other nearby commercial development, and to and from the heavily used transit stops around the mall. Although the intersection is signalized, there are several nearby driveway entrances that compound pedestrian hazards at the intersection. This intersection was selected for further study to

identify improvements to make it safer and more pedestrian-accessible while also maintaining vehicular capacity on all four roads.

Alston/Lawson

This signalized intersection is located at the northeastern corner of the NCCU campus. Alston Avenue is a four-lane roadway with heavy traffic and relatively high speeds, which serves as a connection between Downtown Durham and the Durham Freeway south through residential neighborhoods to NCCU and further south to I-40 and Research Triangle Park. The cross-street, Lawson Street, is an east-west connector that runs through the NCCU and Durham Tech campuses, and between many surrounding residential neighborhoods. This intersection has a high level of pedestrian travel, especially from students and employees traveling from the NCCU campus to the surrounding residential neighborhoods. Major issues include creating a safer, more comfortable pedestrian environment and better crossing conditions for travelers crossing Alston Avenue while maintaining roadway vehicular capacity.

Cranford/Cameron

This is a three-legged unsignalized intersection where most pedestrian travel is generated from the neighborhood on the east leg of the intersection (Cranford Road) which crosses over Cameron Boulevard to access the popular Duke Forest Trail to the west, or to Duke University's West Campus via Cameron Blvd. There is a wide shoulder on Cameron that is used for both pedestrian and bicycle travel. Cameron Boulevard serves as a major connection to Duke University, which is located north of the intersection, and to US 15-501, which is located south of the intersection. Although the intersection already has a caution light, it was selected due to continued failure-to-yield by vehicles and a perceived safety issue. It also has particularly difficult geometry as a result of being located both on a hill and a curve. Any improvements should create a better, safer pedestrian crossing environment while also maintaining capacity on Cameron Boulevard and remaining sensitive to major old-growth trees within the area.

Juniper/Hyde Park

Juniper Street and Hyde Park Street are both small two-lane roads located in an urban section of Northeast Central Durham. Although there should be a moderate level of vehicle travel on both streets, there is also an expected high level of pedestrian travel, particularly as a result of the church in the southeastern quadrant of the intersection and its accompanying parking lot in the northeastern quadrant. There is poor sight distance on Juniper Street, where there is a dip in the road west of the

intersection. This intersection was selected due to safety concerns raised by the community and a crash analysis; two pedestrian-related crashes occurred at this location between 2001 and 2003. Although the intersection is currently signalized, it has neither crosswalks nor pedestrian signal heads. Improvement considerations should include installing crosswalks, pedestrian signal heads, and additional sidewalk, as well as warning signs on Juniper Street.

Roxboro/Knox

At this intersection, Roxboro Street intersects Knox Street just north of Downtown and just south of I-85, in the Duke Park neighborhood. As a result, there is heavy vehicular traffic on Roxboro Street headed south into Downtown and north to I-85. In the northwestern quadrant of the intersection is the neighborhood namesake, Duke Park, which is a major attractor for pedestrian trips from surrounding residences. This intersection was selected because, in spite of existing crosswalks and pedestrian crossing signs, there continues to be a problem with safety and vehicle failure-to-yield. Improvements will need to consider how to provide pedestrian access while also maintaining roadway capacity on Roxboro.